EFFECTIVENESS OF FOLEY'S CATHETER SUCTIONING VERSUS CONVENTIONAL CATHETER SUCTIONING ON MUCOSAL INJURY AND LEVEL OF PAIN AMONG PATIENTS WITH TRACHEOSTOMY IN SELECTED HOSPITAL, SALEM.

By

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A DISSERTATION SUBMITTED TO

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DEGREE OF MASTER OF SCIENCE IN NURSING

(MEDICAL SURGICAL NURSING)

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CERTIFICATE

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ABSTRACT

A Comparative study was conducted to evaluate the effectiveness of Foleys catheter suctioning versus conventional catheter suctioning on mucosal injury and level of pain among patients with tracheostomy. A quantitative evaluative approach with quasi experimental post test only design was used. Through non probability convenience sampling technique 60 patients were selected, among them 30 patients from Sri Gokulam Hospital assigned as experimental group I and 30 patients from SKS Hospital assigned as experimental group II. The mucosal injury and level of pain was assessed followed by suctioning procedure at the end of the day for 3 days. The collected data finding reveals that 22(73.3%) samples of experimental group I and 20(66.7%) samples of experimental group II were suctioned more than 5 times with foleys and conventional suction catheters .In experimental group I and II 29(96.7%) were in plastic tracheostomy tube. On day one 8(26.6%) patients from experimental group I had severe pain and 11(36.6%) patients from experimental group II had worst possible pain. Whereas in day three 2(6.6%) from experimental group I had severe pain and 11(36.6%) from experimental group II had worst possible pain. There was no evidence of mucosal injury in both the groups. The post test mean and SD score for experimental group I and II was 1.73±0.71, 3.20±0.58 respectively. The obtained "t"value was 8.58 which was significant at $p \leq 0.05$ level. Hence H1 was retained only for level of pain. There was significant association ($X^2=9.49$) found between conventional suction catheter with type of tracheostomy tube in experimental group II at $p \leq 0.05$ level. Hence H_2 was retained only for this variable. The study concludes that foleys catheter suctioning was effective than conventional suction catheter in reducing the level of pain among patients with tracheostomy and there was no significant changes in the mucosal injury irrespective of foleys catheter and conventional catheter suctioning.

CHAPTER I

INTRODUCTION

"Life is not defined by the number of breath you take but by the moments which takes your breath away"- Thompson (1936)

The respiratory system is composed of the upper and lower respiratory tracts. Together, the two tracts are responsible for ventilation (movement of air in and out of the airway). The upper tract, known as the upper airway, warms and filter's inspired air so that the lower respiratory tract (the lungs) can accomplish gas exchange. Gas exchange involves delivering oxygen to the tissues through blood stream and excretion of carbon-dioxide. Any alteration in respiratory systems leads to various life threatening complications like obstructive diseases and respiratory failure. **(Suzanne C. Smeltzer, 2004)**

Airway obstruction may be complete or partial. Complete airway obstruction is a medical emergency. Partial airway obstruction may occur as the results of aspiration of food, laryngeal edema, tracheal stenosis, inflammatory diseases like asthma, Chronic obstructive pulmonary disease, chronic bronchitis, airway trauma, cystic fibrosis, bronchiectasis, and emphysema. Airway obstruction may lead to accumulation of secretions, bronchospasm and destruction of lung tissues. Prompt assessment and treatment are essential because partial obstruction may quickly progress to complete obstruction. Interventions to reestablish a patent airway is needed which include endotracheal and tracheostomy intubation. **(Lewis, 2011)**

Artificial airway is used to maintain the patency of airway. There are different types of artificial airway, each one has its own criteria based on the clinical circumstances. In case of short term airway management endotracheal tube, laryngeal

mask airway, oropharyngeal airway, nasopharyngeal airways were used and in case of long term care, tracheostomies were used. **(Corexcel 2004)**

Tracheostomy consists of making an incision on the anterior aspect of the neck and opening a direct airway through an incision in between the fourth and fifth ring of the trachea. The resulting stoma can serve independently as an airway. This tube allows a person to breathe without the use of his or her nose or mouth. Even though it is a life saving procedure. It is well documented that the patient with tracheostomy may have large amounts of mucous secretions. This is a normal reaction to an irritant (the tube) in the airway. Pulmonary secretions removal is normally accomplished by coughing. An effective coughing is accomplished by the closure of epiglottis so that intrathoracic pressure can be increased and secretion explusion will take place. The presence of artificial airway such as tracheostomy prevents glottic closure and effective coughing necessitating the use of tracheal suctioning to remove secretions. If the patient had the following signs and symptoms like frequent mucous secretion , rattling mucous sound from the trachea, fast breathing, bubbles of mucous secretions in the tracheal opening, whistling noise from the trachea, respiratory distress then the suction technique is the effective method for removing the secretions. **(Marianne Chulay, 2006)**

In content of today's critical care, many patients requires prolong intubation and tracheostomy. Though they are life saving procedure they are not totally devoid of complications. Suctioning of secretions via tracheostomy tube with a suction catheter is associated with the complications like mucosal injury and pain its depends upon the suction catheter used. **(EMCON, 2008)**

Need for the Study

"When you can't breath, nothing else matter"

- American Lung Association

European Respiratory Society (ERS) and United Nations reported that respiratory diseases are second to cardiovascular conditions interms of mortality, incidence and prevalence. World wide millions of people suffer everyday from various respiratory diseases. **(ERS and United Nations, 2009)**

In India, the prevalence of chronic obstructive pulmonary disease is estimated to be 1.5% to 0.4% in males and 1.3% to 4.9% in females. Obstructive pulmonary diseases are the most common chronic lung disease, which may increase the resistance to airflow as a result of airway obstruction or airway narrowing. Airway obstruction may results from accumulated secretion, edema and swelling in the lumen of airways, bronchospasm or destruction of lung tissues. **(Lewis, 2010)**

The endotracheal intubation is the most common artificial airway procedure, used for short term airway management. A tracheostomy is the preferred artificial airway for patient requiring long term ventilation (longer than 3 months). Tracheostomy is a life saving surgical intervention to make an opening or hole into the trachea. It can be done electively or as an emergency procedure. Tracheostomy is preferred over prolonged intubation because prolonged endotracheal intubation results in mucosal ulceration, fibrosis and later on stenosis. Intubation granuloma is well documented in patients with prolonged endotracheal intubation. The procedure of tracheostomy has been known for about 3500 years but it was rarely performed until 1800. During 1546 to 1833 (period of fear) tracheostomies were performed only by a few brave surgeons, often at the risk of their reputation. The incidence of overall complications of tracheostomy currently ranges from 5-40%. Generally accepted risk

of complications is around 15% with most common being haemorrhage, excessive mucous secretion, tube obstruction or tube displacement. Besides these, the other known complications are scabs, crusts formation, dysphagia, difficulty with decannulation of the tracheostomy tube and tracheal stenosis. Death occurs in 0.5% to 1.6% of patients and is most commonly caused by haemorrhage and tube blocking. Failure or blockage at any point along that conduct can be most readily corrected with the provision of access for suction equipments. **(Jonathan. P, 2001)**

Suctioning clears the mucous secretion it also has the risk of hypoxemia, bronchospasm, and other adverse reactions, so suction should only be done whenever needed, and duration of suctioning has to be consider during suctioning, it shouldn't go beyond 12 seconds. Indications for suctioning include coughing, more secretions in the airway, respiratory distress, presence of rhonchi on auscultation, increased peak airway pressures on the ventilator, and decreasing SaO_2 or PaO_2. Besides hypoxemia and bronchospasm, complications associated with suctioning include atelectasis and airway trauma. Both may occur when the outer diameter of the suction catheter is greater than one-half of the inner diameter of the tracheostomy tube, which can prevent airflow around the catheter. Choosing a catheter that's the right size, a right material can help prevent greater negative pressures in the airway, potentially minimize falls in PaO_2 and reduce airway trauma. Some of the tracheostomy tube manufacturers provide a chart to help you choose the most appropriate suction catheter for their patient. Suctioning can be an uncomfortable and scary experience for the patients. **(Dr.Ahmed Rohail, 2000)**

It shows that suctioning, even though its a very common procedures for tracheostomy patient, traumatic complications associated with the suction catheter are more, therefore, investigator felt that there is an urgent need to investigate the

problems associated with suctioning and identify strategies to improve them. This study has attempted to do this through suctioning with foley's and conventional suction catheter in order to reduce pain and mucosal injury.

Statement of the Problem

A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem.

Objectives

1. To assess the mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.
2. To evaluate the effectiveness of Foley's catheter suctioning versus conventional catheter suctioning on mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.
3. To compare the effectiveness of Foley's catheter suctioning versus conventional catheter on mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.
4. To associate mucosal injury and level of pain among patients with tracheostomy with their selected background variables in experimental group I and II

Operational Definitions

Effectiveness:

Reduction of mucosal injury and level of pain among patients with tracheostomy as measured by detecting presence of blood in suction catheter and 0-10 Numerical Pain Intensity Scale.

Patient:

Patients who all are admitted in intensive care unit and obtain suctioning through tracheostomy tube.

Pain:

It is an unpleasant sensory experience, experienced by patients during suctioning which can be measured by using 0-10 Numerical Pain Intensity Scale.

Foley's catheter:

A soft end catheter of 14 French, which is made up of silicone materials, that facilitates the removal of secretions during tracheal suctioning.

Conventional suction catheter:

A blunt hallow end tube which is made up of flexible plastic material facilitates the removal of secretions during tracheal suctioning.

Mucosal injury:

Mucosal injury is the damage to the tracheal mucosal layer during suctioning.

Tracheostomy:

Tracheostomy is the creation and maintenance of a surgical airway in between the fourth and fifth tracheal ring through the skin.

Suctioning:

It is the technique which is used to remove the secretions by using foley's or conventional catheter to maintain the patency of the airway.

Assumptions

1. Level of pain and mucosal injury may vary from individual to individual.
2. Foley's catheter suctioning may have some effect on reducing mucosal injury and pain.

Hypotheses

H_1: There will be significant difference between foley's catheter suctioning and conventional catheter suctioning on mucosal injury and level of pain among patients receiving suctioning in experimental group I and II at $p \leq 0.05$ level.

H_2: There will be significant association between mucosal injury and level of pain among patients receiving foley's catheter suctioning in experimental group I and II with their selected background variables at $p \leq 0.05$ level.

Delimitations

The study will be limited to,

1. the patient with tracheostomy
2. 4 weeks.
3. 60 samples

Projected Outcome

1. The study will help to determine empirically the need for foley's catheter suctioning and conventional catheter suctioning to reduce mucosal injury and pain.
2. The study will enable the patient to feel comfortable.
3. The findings of the study will help the investigator to use appropriate catheter for suctioning.

Conceptual framework

Conceptual models are made up of concepts, which are words describing mental images of phenomena and propositions which are statements about concepts. This provides a schematic representation of some relationship among phenomena.

Emestine Wiedenback's proposed a prescriptive theory for nursing which is described as conceiving of a desired situation and the ways to attain it. The

investigator adopted the Wiedenbach's Theory of helping art of clinical nursing 1964, for Conceptual Frame work, According to this theory , nursing practices consist of 3-steps which include.

Step –I: Identifying the need for help

Step-II: Ministering the needed help

Step-III: Validating that the need for the help was met.

This theory shows that the nursing as an art based on a goal (or) central purpose. It consists of 3 factors central purpose, prescription & realities.

Step-I: Identifying the need for help

This involves determining the need for help. The investigator identified the need for reducing the Mucosal injury and level of pain in patient receiving suctioning.

Step-II: Ministering the needed help

The provision of requiring helps for the identified need. It has 2 components

i) Prescription

ii) Realities

Prescription

It involves the plan of care to achieve the purpose, in this investigator provided Foleys catheter suctioning to experimental group I and Conventional catheter suctioning to experimental group II.

Realities

The five realities by Widenbach's are agent , recipient, goal, means, activities and framework.

Agent: The investigator is the agent

Recipient: Recipient is the patient who is receiving suctioning

Goal: Reducing the mucosal injury and pain

Means and Activities: Foleys catheter suctioning and conventional catheter suctioning.

Framework: Sri Gokulam Hospital and SKS Hospital.

Step-III: Validating that the need for the help was met

It is accomplished by comparing the effectiveness of Foleys catheter suctioning versus Conventional catheter suctioning by using 0-10 numerical pain intensity scale and observational check list.

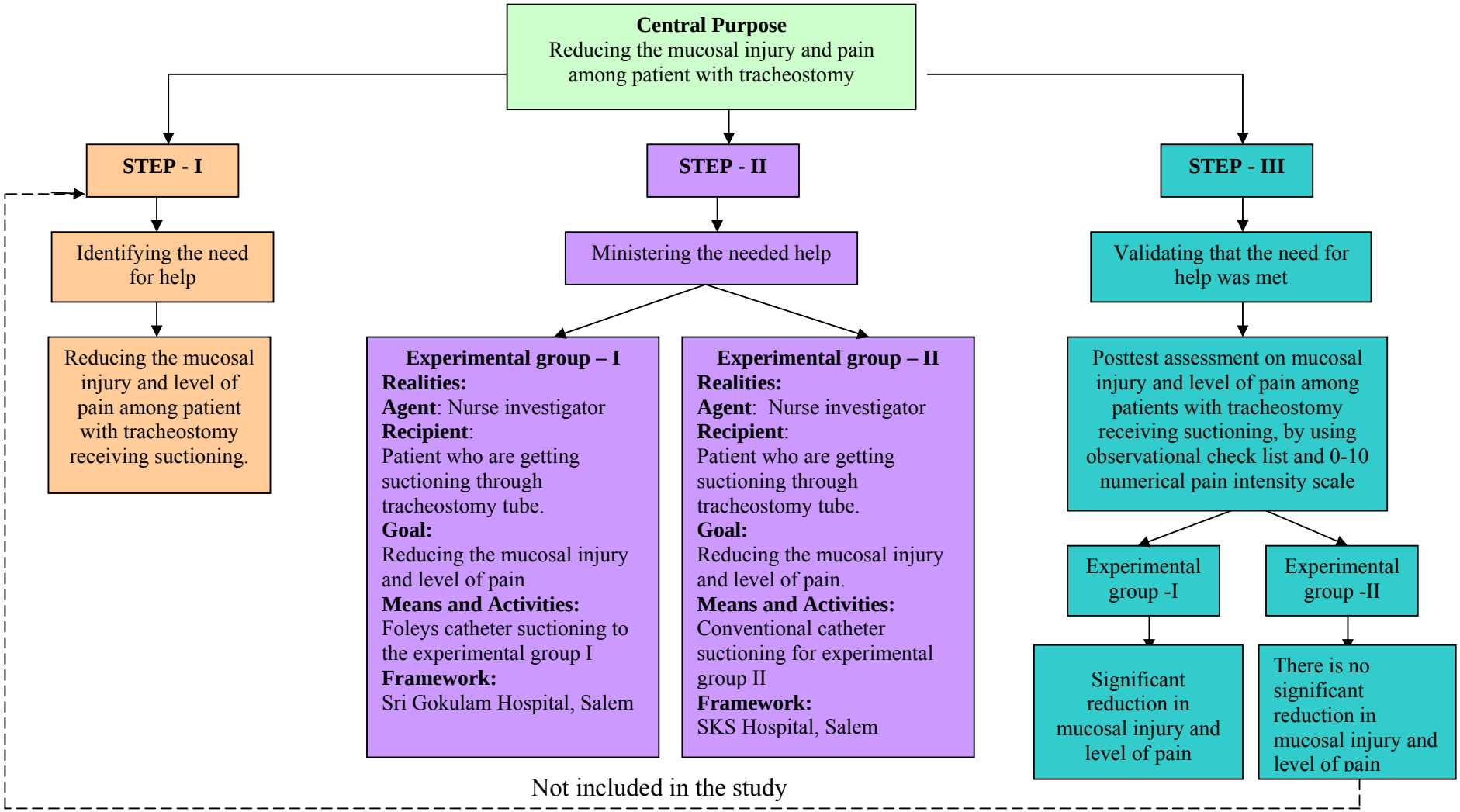

Figure -1.1: Conceptual Framework Based on Wiedenbach's Theory of Helping Art of Clinical Nursing (1964)

Summary

This chapter dealt with introduction, need for the study, statement of the problem, objectives, operational definitions, assumptions, hypotheses, delimitations, projected outcome and conceptual framework.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a written summary of the state of existing knowledge on a research problem. The task of reviewing research literature involves the identification, selection of a critical analysis and written description of existing information on a topic. **(Polit & Hungler, 2003)**

Review of literature is an essential step in the research project. It provides basis for future investigations, justifies the need for study, throws light on the feasibility of the study. Review of literature for the present study is classified under the following headings,

Literature related to,

1. Tracheal suctioning
2. Tracheal mucosal injury
3. Pain during suctioning

1. Literature related tracheal suctioning

A prospective study was conducted to assess the effectiveness of open versus closed tracheal suctioning on reducing the transmission of Gram negative bacteria. Totally 1,110 patients admitted in the intensive care unit for greater than 24 hours were included in the study. Among that 585 patients are subjected to closed suction system and 525 patients subjected to open suction system. Acquisition and cross transmission rates of selected gram negative bacteria were determines through extensive microbiological surveillance. Results shows that acquisition for selected Gram negative bacteria was 35.5 and 32.5 per 1000 patient in closed suctioning and open suctioning respectively. It indicates that overall transmission rates of infection were 5.98 in closed suction systems and 4.7 in open suction system per 1000 patients.

Thus closed suction systems failed to reduce cross-transmission and acquisition rates of the most relevant Gram-negative bacteria in intensive care unit patient. **(Jongerden.IP, 2011)**

A study to assess the effectiveness of a low sodium solution before suctioning in reducing the incidence of ventilator associated pneumonia. A study group consists of totally 66 patients with tracheostomy, among them 33 received the standard saline for airway suctioning and 33 received the low sodium solution. The result shows that patients who received low sodium solution had a decrease in Ventilator Associated Pneumonia rate (2.52±0.82), than the patient received normal saline (4.37±1.33) which was significant at $p \leq 0.05$ level. The investigator concluded that the low sodium solution has significant in reducing Ventilator Associated Pneumonia and other lung diseases. **(Christensen RD, 2010)**

A study to assess the effectiveness of instillation of normal saline before suctioning in reducing the incidence of pneumonia among intubated and mechanically ventilated adults. Totally 262 adults expected to require atleast 72 hours of mechanically ventilation via an endotracheal or tracheostomy tube were included in the study. In that the experimental group consists of 130 patients and control group consists of 132 patients. Closed tracheal suction systems were used for both groups and 8ml of normal saline prior to suctioning was used in the intervention group. Results shows that fewer participants in the saline group develop Ventilator Associated Pneumonia (14/130) than in the control group (31/132) which was significant at $p \leq 0.05$ level. The investigator conclude that instillation of normal saline before tracheal suctioning decreases the incidence of Ventilator Associated Pneumonia in mechanically ventilated adults. **(Reeve.JC, 2009)**

A prospective study to evaluate the incidence of colonization, nosocomial pneumonia, and mortality in critically ill patients using a closed suction system versus open suction system. Study consists of 84 mechanically ventilated patient, which is equally divided into two groups. That is 42 patients in experimental group I were subjected to closed suctioning and another 42 patients in experimental group II were subjected to open suction. Results shows that closed suctioning was associated with a significant increase in colonization (193.36±28.68) compared with open suctioning (169.17±28.78), the obtained 'Z' value was 11.41which was significant at $p \leq 0.05$ level. However, difference in the incidence of nosocomial pneumonia was not significantly different between closed and open suctioning. Survival analysis demonstrated that the probability of survival without developing nosocomial pneumonia was greater among closed suctioning patients when compared to open suctioned patient. This study shows that suctioning performed via the closed suction system increases the incidence of colonization but not the incidence of nosocomial pneumonia and may actually decrease mortality when compared with open suction systems. **(Deepe. SA, 2006)**

2. Literature related to tracheal mucosal injury

A prospective study was conducted in vinayaga mission university, Salem. To evaluate the effectiveness of Foley's catheter Vs conventional catheter suctioning on tracheal mucosal injury. Patient those who had tracheostomy were included in the study. Patient with bleeding disorders, coagulation profile abnormalities were excluded from the study. The entire patient was suctioned frequently by Foley's catheter and Conventional suction catheter. Data were collected from 363 patients of whom 181 were randomized to Foley's catheter group and 182 to the Conventional suction catheter group, the results shows that 2% of the patients developed bleeding

when Foley's catheter suctioning was used as compared to 23% when conventional suction catheter used. The researcher concluded that Foley's catheter was more effective in reducing the mucosal injury than conventional suction catheter. (**R.Prasad, & M.Srinivas, et.al, 2008)**

An experimental study was conducted to examine the influence of suction catheter tip design on tracheobronchial trauma. Patients who had tracheostomy were included in the study. The researcher used five commercially available tracheobronchial suction catheters for the study. In order to find out invagination or grabbing of trachobronchial mucosa with the help of bronchofibroscope. The results shows that the catheters with multiple side holes appeared to invaginate mucosa less frequent(mean=1.9) and produce minimal damage to tracheal mucosa than the single lumen catheter(mean=2.9). **(Link, K.L.J, 2007)**

A study was conducted to assess the acute histological changes in the tracheobronchial tree associated with different suction catheter insertion techniques. The study samples consist of anesthetized, intubated patients who were subjected to one of two procedures. That is, experimental group I are subjected to insertion of a suction catheter to a predetermined distance and withdrawal with or without the application of suction and experimental group II were subjected to insertion of the catheter until resistance was met and withdrawal with or without the application of suction. There were 10 patients in each group. All 10 of the patients in the "predetermined distance" groups had normal tissues. Of the 10 patients in the "resistance" groups, nine displayed multifocal areas of denuded epithelium and varying degrees of inflammation. Only one subject from the "resistance/ suction" group had normal tissues. The Kruskal-Wallis rank test revealed a significant difference between the predetermined and the resistance groups. **(Kleiber.C, 2003)**

A study was conducted to compare the effectiveness and complications of deep versus shallow suctioning on tracheostomy patient. The methods of suctioning vary according to institutional practice and the individual clinician performing the task. The depth of suctioning was one of these variables. The sample consist of 60 patients which equally divided in to two groups, that is 33 patients were subjected to deep suctioning and 33 patients were subjected to shallow suctioning. The catheter passed to the tip of the tracheostomy tube or beyond the tip into the trachea to facilitate removal of secretions. However, there was an increased level of trauma to the lower airways may result from the suction catheter being passed into the airway beyond the tip of the tracheostomy tube (6.43±1.17), when compared to shallow suctioning (5.83±0.99), the obtained 'T' value was 3.29 which was significant at $p \leq 0.05$ level. **(Spence K, 2002)**

The study was conducted to evaluate differential effects of continuous versus intermittent suction on tracheal tissue. The purpose of this study was to determine the differential effect of continuous versus intermittent application of negative pressure on tracheal tissue during tracheal suctioning. The sample consisted of 12 patients, randomly assigned to group 1(N=5), continuous suction, or group 2 (N = 5), intermittent suction. All patients were orally intubated. Two control patients were intubated and not suctioned. Patients in group 1 and 2 were suctioned every 15 minutes for 4 hours. Tracheal suctioning was performed by using a 14F suction catheter either continuously or intermittently at a suction pressure of 200mmHg and a suction flow rate of 16 L/min. Tracheal tissue samples were examined for simplified and major simplified damage, ulceration, and ulceration with necrosis. Results indicated that all forms of damage were present with both suctioning techniques. **(Czarnik RE, 2001)**

A study was conducted to test the effect of different negative pressures on tracheobronchial trauma in the presence of simulated mucus. Measured amounts of simulated mucus were injected into the trachea of two anesthetized patients. Suctioning was performed using a different negative pressure for each patient. The trachea was examined after the procedure for any pathologic changes. Tracheobronchial trauma occurred with suctioning at negative pressures of 100mmHg and 200mmHg. however damage was greater, at 200mmHg. Results were consistent with postulates made by other investigators in that the extent of tracheobronchial trauma was directly related to the magnitude of negative pressure applied. Comparison of this study with studies which omitted mucus simulation suggests that the amount of damage is not related to the amount of mucus in the trachea. It is because of the negative pressure used. **(Kuzenski, BM, 2000)**

A study on comparison of tracheobraonchial suction catheters in humans. A study samples consists of 20 patients who undergone diagnostic or therapeutic bronchoscopic examination. The effect of a single suctioning procedure on the airway mucosa was observed through a fiberoptic bronchoscope. A variety of catheters of various designs were evaluated. All produced a negligible amount of trauma, and none was superior in effectively evacuating mucus from the airways. Mucosal trauma with tracheobronchial suctioning procedures is more likely due to repetition, vigor and amount of suction applied, regardless of which type of catheter is used. **(Jung RC, 2000)**

3. Literature related to pain during suctioning

A descriptive study was conducted to evaluate the pain during tracheal suctioning. A total of 744 patients underwent the tracheal suctioning procedure that was performed primarily in intensive care units (93%). A 0-10 Numerical Rating

Scale, a behavioural observation tool, and a modified McGill Pain Questionnaire – short form were used for pain assessment. Pain intensity scores were significantly greater during the tracheal suctioning procedure (M =3.96, SD = 3.3) than prior to (M=2, SD = 2.8) or after (M=1.98, SD = 2.7) tracheal suctioning. **(Arroyo-Novoa CM, 2008)**

A descriptive study was conducted to evaluate the behaviour of pain which is observed during six common procedures. The purpose of this study was to identify specific pain related behaviours and factors that predict the degree of behavioural responses during the following procedures; turning, central venous catheter insertion, wound drain removal, wound care, tracheal suctioning and femoral sheath removal. A 30 item behaviour observation tool was used to note patient behaviours before and during a procedure. By comparing behaviours exhibited before and during the procedure as well as behaviours in those with and without procedural pain we identified specific procedural pain behaviours: grimacing, rigidity, wincing, shutting of eyes, verbalization, moaning, and clenching of fists. On average, there were significantly more behaviours exhibited by patients with versus without procedural pain (3.5 vs 1.8 behaviours; t =38.3, df = 5072.5; 95% confidence interval, 1.6 – 1.8). Patients with procedural pain were at least three times more likely to have increased behavioural responses than patients without procedural pain. **(Puntillo KA, 2004)**

CHAPTER III

METHODOLOGY

This study is designed to evaluate the effectiveness of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning on reducing Mucosal injury and Level of pain among patients with Tracheostomy. This chapter include research design, description of settings, variables, population, sample, sampling technique, sample size, criteria for sample selection, description of tool, validity, reliability, pilot study, data collection procedure and data analysis method.

Research Approach

Quantitative evaluative research approach was adopted for the study

Research Design

The research design selected for this study was Quasi-experimental post test only design.

E_1	X_1	O_1
E_2	X_2	O_2

E_1: Experimental group - I

X_1: Foley's Catheter suctioning

O_1: Assessment of Mucosal injury and Level of pain among experimental group-I

E_2: Experimental group-II

X_2: Conventional catheter suctioning

O_2: Assessment of Mucosal injury and Level of pain among experimental group-II

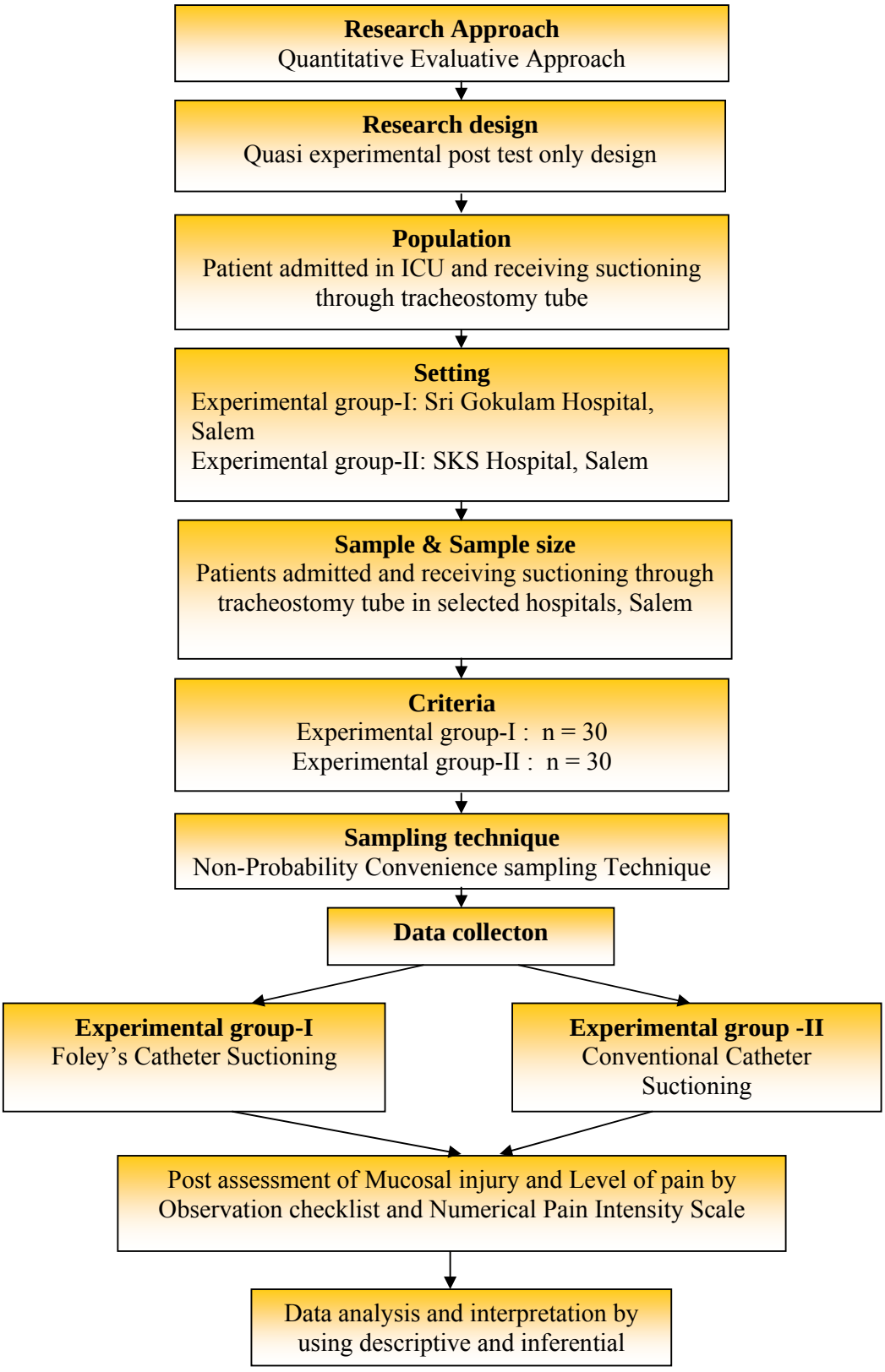

Figure-3.1: Schematic Representation of Research Methodology

Population

The population of this study comprises of patients admitted in ICU and receiving suctioning through tracheostomy tube in selected hospitals Salem.

Description of the Setting

The study was carried out in Sri Gokulam Hospital (Experimental group-I) and SKS Hospital (Experimental group-II), Salem. Sri Gokulam Hospital is equipped with 330 beds and it has various departments like ICU, NICU, Trauma ICU, Emergency unit and IMCU. Sri Gokulam Hospital is about 1 km away from New Bus stand, Salem. The monthly census report of patients with tracheostomy in ICU and Trauma ICU is 65-70. Whereas the SKS Hospital is equipped with 160 beds and it has various departments like ICU, NICU and Emergency unit. SKS Hospital is about half kilometer away from New Bus stand, Salem. The monthly census report of patients with tracheostomy in ICU is 40-50.The investigator selected these settings for the availability of the sample and feasibility of the study.

Sampling

- **Sample**

  The sample of this study comprises of patients admitted in ICU and receiving suctioning through tracheostomy tube in Sri Gokulam Hospital and SKS Hospital, Salem, during the study period and those met sampling criteria.

- **Sample Size**

  The investigator selected 60 patients admitted in ICU and receiving suctioning. Among them 30 patients of Sri Gokulam Hospital were assigned to experimental group I and other 30 patients of SKS Hospital were assigned to experimental group II.

- **Sampling technique**

The investigator selected samples by Non-probability convenience sampling technique.

- **Criteria for Sample Selection**

Inclusive criteria:

Patients,

1. with tracheotomy tube.
2. who are conscious.
3. With the age group between 20-60.
4. who can able to follow instructions.
5. of both sex admitted in Sri Gokulam hospital and SKS hospital.
6. those who can understand Tamil and English.
7. those who are all on first day of tracheostomy

Exclusive criteria:

Patients,

1. with bleeding disorder and coagulation profile abnormalities.
2. receiving anti-coagulant therapy.
3. Who are unconscious.
4. with psychiatric disorder.
5. with neurological disorder.

Variables

1. **Independent variable:** Foley's catheter suctioning Versus Conventional catheter Suctioning.
2. **Dependent variable:** Mucosal injury and Level of pain.

Description of Tool

It consists of following sections.

Section-A: **Background variables**

This section consists of Background data such as age, sex, frequency of suctioning, type of tracheostomy tube.

Section-B: Assessment of Mucosal injury and Level of pain using observational checklist and 0-10 Numerical Pain Intensity Scale.

Table-1: Scoring procedure for assessing Mucosal injury

Bleeding	**Score**	
	Present	1
	Absent	0

Table-2: Scoring procedure for assessing Level of Pain using 0-10 Numerical Pain Intensity scale (Standardized)

Level of pain	**Score**
No pain	0
Mild pain	1
Moderate pain	2
Severe pain	3
Worst pain	4

Validity and Reliability

Validity

Validity of the tool was obtained from Six Experts in the field of Nursing and Two from the field of Medicine.

Reliability

The reliability of the tool was checked and was established by using interrater method r' = 0.98, which showed that the tool was reliable and was considered for proceeding.

Pilot Study

Pilot study was conducted to find out the feasibility of the study. A formal permission was obtained from the concerned authority of the hospitals. Pilot study was conducted with a sample size of 4 patients with tracheostomy tube, in this 2 from Pranav Hospital were selected to experimental group I and 2 from Vinayaga Mission Hospital were selected to experimental group II. The collected data was analyzed by using descriptive and inferential statistics. The pilot study revealed that the tool was feasible and practicable.

Method of Data Collection

Ethical consideration:

Prior to the collection of data written permission was obtained from the Managing Trustee of the Sri Gokulam Hospital and General Manager of SKS hospital, Salem.

Data collection procedure

The data was collected from 11.07.2011 to 07.08.2011. The samples who fulfilled the inclusive criteria were selected for the study. Out of 60 samples, 30 were selected to Sri Gokulam Hospital which belongs to experimental group I and 30 were selected to SKS Hospital which belongs to experimental group II. The entire patient in the experimental group I were subjected to foleys catheter suctioning and the patient from experimental group II were subjected to conventional catheter suctioning. This procedure was carried out for the period of three days, the mucosal injury and the

level of pain was assessed by using observational check list and 0-10 numerical pain intensity scale. Data was collected and analysed by using descriptive and inferential statistics.

Plan for Data Analysis

The statistical method will be used for analysis are descriptive and inferential statistics. The data related to background variables were analyzed by using descriptive measures (frequency, percentage). Inferential statistics of t-test will be used to evaluate the effectiveness of foley's catheter suctioning Versus Conventional catheter suctioning on mucosal injury and level of pain among patients with tracheostomy and chi-square test will be used to associate the mucosal injury and pain among patients with tracheostomy with their selected background variables in experimental group-I and II.

Summary

This chapter consists of research approach, research design, population, description of the setting, sampling, variables, description of the tool, validity and reliability, pilot study, method of data collection, and plan for data analysis.

CHAPTER IV

DATA ANALYSIS AND INTERPREATION

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of foley's catheter suctioning versus conventional catheter suctioning on level of pain and mucosal injury among patients with tracheostomy.

The collected data was tabulated, organised and analysed by using descriptive and inferential statistics as follows,

Section–A:

Distribution of patients according to their background variables.

Section–B:

a) Distribution of patients with tracheostomy according to their posttest mucosal injury in experimental group I and II.
b) Distribution of patients with tracheostomy according to their posttest level of pain in experimental group I and II.
c) Comparison of mean, standard deviation and mean percentage on level of pain among patients with tracheostomy in experimental group I and II.

Section – D: Hypotheses testing

a) Comparison of effectiveness of foley's catheter suctioning versus conventional catheter suctioning on level of pain among patients with tracheostomy in experimental group I and II.
b) Association of mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.

Section – A

Distribution of Patients According to their background Variables.

Table– 4.1:

Frequency and percentage distribution of patients in experimental group-I and experimental group-II according to their background variables.

n=60

S. No	Background variables	Experimental group-I (n =30)		Experimental group -II (n =30)	
		f	%	f	%
1.	**Age in years**				
	a. 21 – 30	5	16.7	6	20
	b. 31 – 40	9	30	9	30
	c. 41 – 50	11	36.6	11	36.6
	d. 51 – 60	5	16.7	4	13.4
2.	**Sex**				
	a. Male	19	63.3	20	66.7
	b. Female	11	36.7	10	33.3
3.	**Frequency of suctioning/day**				
	a. 1-5	8	26.7	10	33.3
	b. >5	22	73.3	20	66.7
4.	**Type of tracheostomy tube**				
	a. Plastic	29	96.7	29	96.7
	b. Metal	1	3.3	1	3.3

The above table-4.1 shows the distribution of patients according to their background variables. In experimental group-I, 11 (36.6%) and experimental group II 11 (36.6%) of them were in 41-50 years. In experimental group-I 19 (63.3%) and experimental group-II 20 (66.7%) of them were males. In experimental group-I 22 (73.3%) and experimental group-II 20 (66.7%) of them underwent the frequency of suctioning >5 times. In experimental group-I and experimental group-II 29 (96.7%) of them were using plastic tracheostomy tube .

Section - B

a) Distribution of patients with tracheostomy according to posttest mucosal injury in experimental group I and II.

The post test reveals that there was no evidence of mucosal injury secondary to suctioning with foleys catheter and conventional suction catheter in experimental group I and II.

b) Distribution of patients with tracheostomy according to their posttest level of pain in experimental group I and II.

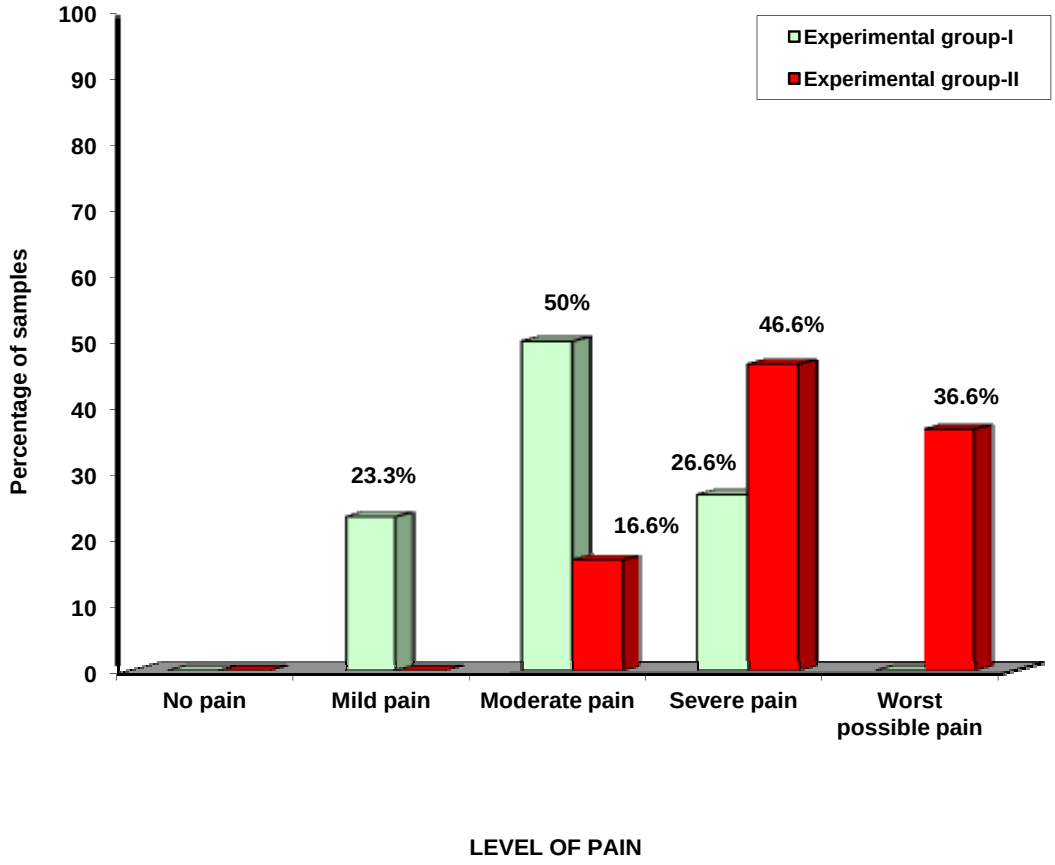

Figure-4.1: Percentage distribution of patients with tracheostomy according to their post test level of pain on Day-1 of experimental group I and II.

The above bar diagram shows that in experimental group-I, 7(23.3%) patients had mild pain, 15(50%) had moderate pain and 8(26.6%) had severe pain. In experimental group-II, 5(16.6%) of patients had moderate pain, 14(46%) had severe pain and 11(36.6%) had worst possible pain. This highlights that experimental group I had minimal pain when compared to experimental group II.

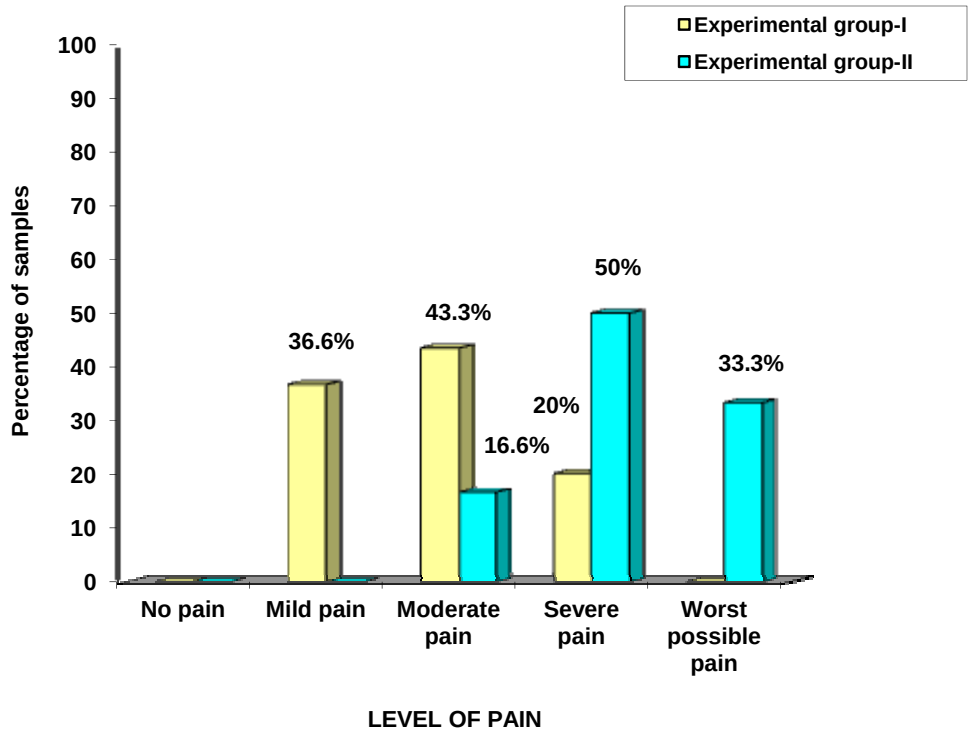

Figure-4.2: Percentage distribution of patients with tracheostomy according to their post test level of pain on Day-2 of experimental group I and II.

The above bar diagram shows that in experimental group-I, 11(36.6%) patients had mild pain, 13(43.3%) had moderate pain and 6(20%) had severe pain. In experimental group-II, 5(16.6%) patients had moderate pain, 15(50%) had severe pain and 10(33.3%) had worst possible pain. This shows that experimental group I had mild pain when compared to experimental group II.

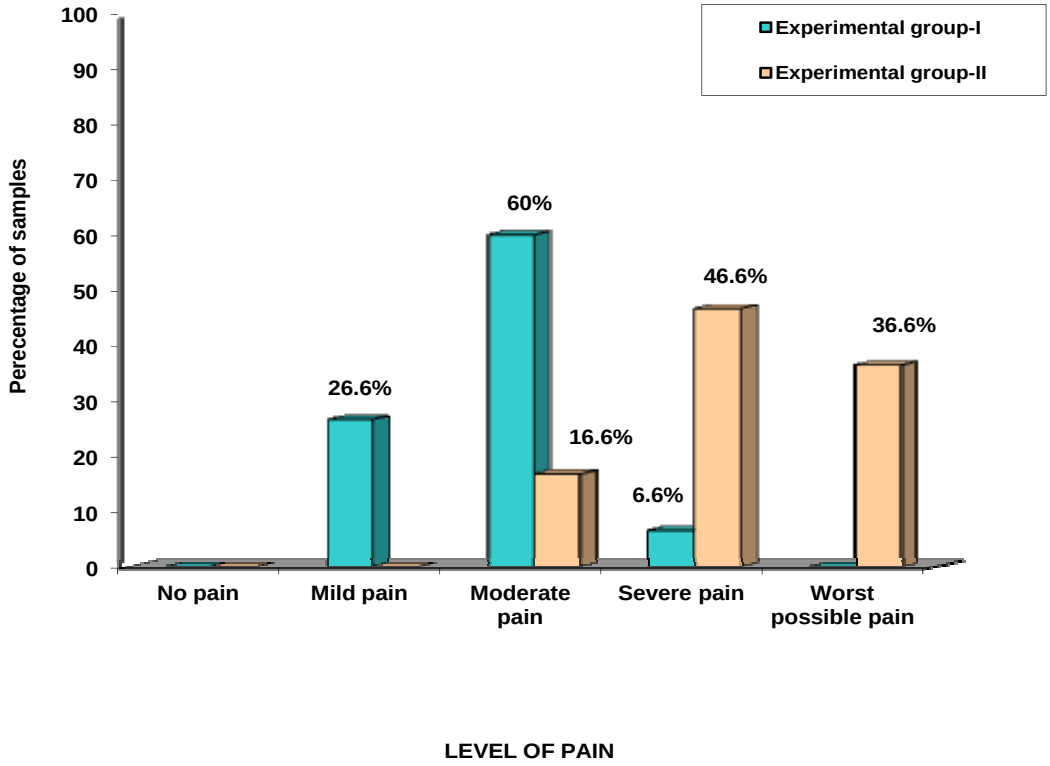

Figure-4.3: Percentage distribution of patients with tracheostomy according to their post test level of pain on Day-3 of experimental group I and II.

The above bar diagram shows that, in experimental group-I 10(26.6%) patients had mild pain, 18(60%) had moderate pain, and 2(6.6%) had severe pain. In experimental group-II 5(16.6%) patients had moderate pain, 14(46.6%) had severe pain and 11(36.6%) had worst possible pain. This reveals that experimental group I had mild pain when compared to experimental group II.

c) Comparison of mean, standard deviation and mean percentage on level of pain among patients with tracheostomy in experimental group-I and II

Table-4.2:

Comparison of mean, standard deviation, mean percentage on level of pain among patients with tracheostomy in experimental group-I and II.

n=60

Variable	Maximum score	Experimental group I			Experimental group II			Difference in mean %
		Mean	SD	Mean %	Mean	SD	Mean %	
Level of pain	4	1.73	0.71	43	3.20	0.58	80	37

Table-4.2 shows that in experimental-I mean, standard deviation was 1.73±0.71. In experimental group-II mean, standard deviation was 3.20±0.58. The Mean percentage in experimental group-I was 43% and experimental group-II 80%. The difference in mean percentage was 37%. It reveals that there is a reduction of pain in experimental group I than in experimental group II.

Section – D

Hypotheses Testing

a) Comparison of effectiveness of foley's catheter suctioning and conventional catheter suctioning on reducing level of pain among patients with tracheostomy in experimental group I and II.

Table-4.3:

Mean, Standard Deviation, 't' value on level of pain among patients with tracheostomy in experimental group I and II.

n=60

Group	Mean	SD	df	Table value	't' value
Experimental group I	1.73	0.71	58	2.01	8.58*
Experimental group II	3.20	0.58			

***Significant at p< 0.05 level**

Table-4.4 reveals that in experimental group-I the mean and standard deviation score 1.73±0.71 respectively, in experimental group II the mean and standard deviation score was 3.20±0.58 respectively. The t- value is 8.58* which is significant at $p \leq 0.05$ level and the hypothesis (H_1) is retained. Thus it becomes evident that the foley's catheter suctioning was very effective in reducing the level of pain during suctioning.

b) Association of mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.

Association on mucosal injury among patients with tracheostomy in experimental group-I and II with their selected background variables

Post test reveals that, there was no risk of developing mucosal injury secondary to suctioning with foley's catheter and conventional suction catheter. Hence, association was not possible.

Table-4.4: Association on the level of pain among patients with tracheostomy in experimental group I and II with their selected Background variables

n=60

S. No	Background variables	Experimental group –I (n=30)			Experimental group II (n=30)		
		Foleys catheter		Table value	conventional catheter		Table value
		df	χ^2		df	χ^2	
1.	Age in years	12	4.69	21.0	12	14.13	21.0
2.	Sex	4	1.17	9.49	4	1.12	9.49
3.	Frequency of suctioning	4	7.07	9.49	4	4.68	9.49
4.	Type of tracheostomy tube	4	7.7	9.49	4	12.38*	9.49

***Significant at p< 0.05 level**

In experimental group-I there was no association between the level of pain with their background variables such as age, sex, frequency of suctioning, type of tracheostomy tube. In experimental group-II there was significant association between the level of pain with their background variables at $p \leq 0.05$ level. The research hypothesis H_2 is retained in experimental group II for type of tracheostomy tube only.

Summary

This chapter dealt with data analysis and interpretation in the form of statistical values based on the objectives. Frequency and percentage on the level of pain among patients with tracheostomy receiving suctioning with their selected background variables. The 't' test was used to evaluate the effectiveness of foleys catheter suctioning versus conventional catheter suctioning on reducing level of pain among patients with tracheostomy receiving suctioning. The chi square test was used to find out the association between the level of pain among tracheostomy patient receiving suctioning.

CHAPTER – V

DISCUSSION

This study was conducted to compare the effectiveness of foley's catheter suctioning versus conventional catheter suctioning on mucosal injury and level of pain among patients with tracheostomy with their selected background variables.

Frequency and percentage distribution of patients in experimental group I and II according to their background variables.

The distribution of background variables among patients with tracheostomy reveals that, In experimental group I and II 11(36.6%) of them were in the age group of 41-50 years. In experimental group-I 19(63.3%) and experimental group-II 20(66.7%) of them were males. In experimental group-I 22(73.3%) and experimental group-II 20(66.7%) of them underwent the frequency of suctioning >5 times. Both in experimental group I and II 29(96.7%) of them had plastic tracheostomy tube.

The first objective of the study was to assess the mucosal injury and level of pain among patients with tracheostomy in experimental group I and II.

According to data obtained from both the groups , there is no evidence of mucosal injury secondary to suctioning. It shows that there was no risk of developing mucosal injury with foleys and conventional suction catheter .

On the first day in experimental group-I, 7(23.4%) patients had mild pain, 15(50%) had moderate pain and 8(26.6%) had severe pain. In experimental group-II, 5(16.6%) of patients had moderate pain, 14(46.8%) had severe pain and 11(36.6%) had worst possible pain.

On the second day in experimental group-I, 11(36.6%) patients had mild pain, 13(43.3%) had moderate pain and 6(20%) had severe pain. In experimental group-II,

5(16.6%) patients had moderate pain, 15(50%) had severe pain and 10(33.3%) had worst possible pain.

On the third day in experimental group-I 10(26.6%) patients had mild pain, 18(60%) had moderate pain, and 2(6.6%) had severe pain. In experimental group-II 5(16.6%) patients had moderate pain, 14(46.6%) had severe pain and 11(36.6%) had worst possible pain.

A prospective study was conducted in vinayaga mission university, Salem. To evaluate the effectiveness of foley's catheter Vs conventional catheter suctioning on tracheal mucosal injury. The results show that 2% of the patients developed bleeding when foley's catheter suctioning was used as compared to 23% when conventional suction catheter used. The researcher concluded that foley's catheter was more effective in reducing the mucosal injury than conventional suction catheter.

R.Prasad, & M.Srinivas, et.al, (2008)

The second objective of the study was to evaluate the effectiveness of Foley's catheter suctioning versus conventional catheter suctioning on mucosal injury and level of pain among patients with tracheotomy in experimental group I and II.

In experimental-I mean, standard deviation was 1.73±0.71. In experimental group-II mean, standard deviation was 3.20±0.58 respectively and the mean difference shows that pain level was reduced in experimental group I than in the experimental group II. The 't' value is 8.58* which was significant at $P \leq 0.05$ level. Hence the hypothesis H_1 is retained. It reveals that foley's catheter suctioning was effective in reducing the pain during suctioning than conventional suction catheter.

A descriptive study was conducted to evaluate the pain during tracheal suctioning. A total of 744 patients underwent the tracheal suctioning procedure that

was performed primarily in intensive care units (93%). A 0-10 Numerical Rating Scale, a behavioural observation tool, and a modified McGill Pain Questionnaire – short form were used for pain assessment. Pain intensity scores were significantly greater during the tracheal suctioning procedure (M =3.96, SD = 3.3) than prior to (M=2, SD = 2.8) or after (M=1.98, SD = 2.7) tracheal suctioning. **(Arroyo-Novoa, CM, 2008)**

The third objective of the study was to compare the effectiveness of foley's catheter versus conventional catheter suctioning on mucosal injury and level of pain among patients with tracheotomy in experimental group I and II.

In experimental group-I mean, standard deviation was 1.73±0.71. In experimental group-II mean, standard deviation was 3.20±0.58. The mean percentage in experimental group-I was 43% and experimental group-II 80%. The difference in mean percentage was 37%. It reveals that there was a reduction of pain in experimental group I than in experimental group II.

The fourth objective of the study was to associate mucosal injury and level of pain among patient with tracheostomy with their selected Background variables in experimental group I and II.

The post test reveals that, there was no risk of developing mucosal injury followed by suctioning with foleys and conventional suction catheter. Hence association was not possible for the mucosal injury. whereas the present study findings reveals that in experimental group-I there was no association between the level of pain with their background variables such as age, sex, frequency of suctioning per day, type of tracheostomy tube. In experimental group-II there was significant association between the level of pain with their selected background variables at

$p \leq 0.05$ level. The research hypothesis H_2 was retained for type of tracheostomy tube only.

Summary

This chapter dealt with discussion of the study with reference to the objective and supportive studies. All the four objectives have been obtained and one hypothesis was retained in this study.

CHAPTER-VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter consists of four sections. In the first two sections, the summary and conclusion are presented. In the last two sections, the recommendations for further research and implications for nursing practice are presented.

Summary

The purpose of this study was to evaluate the effectiveness of foley's catheter suctioning versus conventional catheter suctioning on level of pain and mucosal injury among patients with tracheostomy. A Quasi experimental design was used to conduct this study at Sri Gokulam Hospital and SKS Hospital, Salem. Totally 60 patients with tracheostomy were selected through Non-Probability Convenience Sampling technique. Among 60 patients, 30 patients of Sri Gokulam Hospital were assigned to experimental group-I and 30 of SKS Hospital were assigned to experimental group –II. Mucosal injury and level of pain was evaluated by using observational check list and 0-10 numerical pain intensity scale. Posttest was done by using the data obtained from the study period.

The baseline data was tabulated by formulating frequency table. The 't' test was used to evaluate the effectiveness of foley's catheter suctioning versus conventional catheter suctioning on level of pain among patients with tracheostomy and chi-square test was used to find out association between level of pain among patients with tracheostomy receiving suctioning.

The Major Findings of the study

- In experimental group-I, 11 (36.6%) and experimental group II 11 (36.6%) of them were in 41-50 years.
- In experimental group-I 19 (63.3%) and experimental group-II 20 (66.7%) of them were males.
- In experimental group-I 22 (73.3%) and experimental group-II 20 (66.7%) of them underwent the frequency of suctioning >5 times.
- In experimental group-I and experimental group-II 29 (96.7%) of them were using plastic tracheostomy tube .
- In experimental group-I, 7(23.3%) patients had mild pain, 15(50%) had moderate pain and 8(26.6%) had severe pain.
- In experimental group-II, 5(16.6%) of patients had moderate pain, 14(46%) had severe pain and 11(36.6%) had worst possible pain.
- In experimental group-I, 11(36.6%) patients had mild pain, 13(43.3%) had moderate pain and 6(20%) had severe pain.
- In experimental group-II, 5(16.6%) patients had moderate pain, 15(50%) had severe pain and 10(33.3%) had worst possible pain.
- In experimental group-I 10(26.6%) patients had mild pain, 18(60%) had moderate pain, and 2(6.6%) had severe pain. In experimental group-II 5(16.6%) patients moderate pain, 14(46.6%) severe pain and 11(36.6%) worst possible pain.
- In experimental group-I and II, there was no evidence of mucosal injury secondary to suctioning with foley's catheter and conventional suction catheter.

- On Day-1, in experimental group-I 7(23.3%) patients had mild pain, 15(50%) had moderate pain and 8(26.6%) had severe pain. In experimental group-II, 5(16.6%) patients had moderate pain, 14(46%) had severe pain and 11(36.6%) had worst possible pain.
- On Day – 2, in experimental group-I, 11(36.6%) patients had mild pain, 13(43.3%) had moderate pain and 6(20%) had severe pain. In experimental group-II, 5(16.6%) patients had moderate pain, 15(50%) had severe pain and 10(33.3%) had worst possible pain.
- On Day-3 in experimental group-I 10(26.6%) patients had mild pain, 18(60%) had moderate pain, and 2(6.6%) had severe pain. In experimental group-II 5(16.6%) patients had moderate pain, 14(46.6%) had severe pain and 11(36.6%) had worst possible pain.
- In experimental group-I mean, standard deviation was 1.73±0.71. In experimental group-II mean, standard deviation was 3.20±0.58. The Mean percentage in experimental group-I was 43% and experimental group-II 80%.
- In experimental group-I the mean and standard deviation score 1.73±0.71 respectively, in experimental group II the mean and standard deviation score was 3.20±0.580 respectively. The t- value is 8.58* which is significant at $p \leq 0.05$ level and the hypothesis (H_1) is retained.
- In experimental group I and II there was no risk of developing mucosal injury followed by suctioning with foleys and conventional suction catheter. Hence association was not possible.
- In experimental group-I there was no association between the level of pain with their background variables such as age, sex, frequency of suctioning type of tracheostomy tube.

- In experimental group-II there was significant association between the level of pain with their background variables at $p \leq 0.05$ level. The research hypothesis H_2 was retained for type of tracheostomy tube only.

Conclusion

This study was to evaluate the effectiveness of foley's catheter suctioning versus conventional catheter suctioning among patients with tracheostomy in selected hospitals, Salem. The results shows that foleys catheter suctioning was more effective in reducing the pain during suctioning in experimental group I there was no significant association between the level of pain with their background variable. Where as in experimental group II there was a significant association found on type of tracheostomy tube.

Implications

Nursing Practice:

- Suitable suction catheter has to be practiced as a routine nursing care for patients with tracheostomy.
- Usage of appropriate suction catheter helps on significant reduction of pain among patients with tracheostomy.
- Awareness can be created among student nurses on foley's catheter suctioning.
- Formal protocol should be prepare for suctioning tracheostomy patients.

Nursing Education:

- Nurse educator should provide adequate training to the students regarding suctioning technique.

- In service education program should be conducted for nursing personnel and help nurses to gain knowledge on reduction of pain by using appropriate suction catheters .
- Educator can encourage students to bring out innovative and creative ideas in managing pain.
- Periodic conferences, seminars and symposium can be arranged regarding alternative and complementary therapies to update nursing professional about its importance.

Nursing Research:

- The generalization of study result can be made by replication of the study.
- Disseminate the findings through conferences, seminars, publication in journals and worldwide web.
- Findings of this study can be utilized for conducting further observational study.
- The finding of the study can help to expand the scientific body of professional knowledge upon which further research can be conducted. It will in turn strengthen nursing research pertaining to clinical nursing.

Nursing Administration:

- The nurse administrator can plan and organize continuing education program and inservice education program on using suitable suction catheters .
- The nurse administrator should take more responsibility to implement a protocol of foley's catheter suctioning for patients with tracheostomy.

Recommendations

1. A comparative study can be conducted with different suctioning catheters to reduce level of pain and mucosal injury.
2. Similar studies can be conducted with the more samples on a long term basis.
3. A study can be conducted at various settings to identify the factor influencing the suctioning related complications. Protocol can be prepared for suctioning tracheostomy patients.

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ANNEXURE – A

LETTER SEEKING PERMISSION TO CONDUCT THE RESEARCH STUDY

From

Mr. M.Jawahar Babu,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I, **Mr. M.Jawahar Babu,** II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfilment for the award of M.Sc. (Nursing) Degree.

Topic: "**A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem".**

I request you to kindly do the needful.

Thanking you.

Date : 13.07.2011 Yours sincerely,

Place : Salem

(M.Jawahar Babu)

ANNEXURE – B

LETTER GRANTING PERMISSION TO CONDUCT THE RESEARCH STUDY

From

Mr.M.Jawahar Babu
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Managing Director,
Sri Gokulam Hospital,
Salem.

Through

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project – request – reg.

I, **M.Jawahar Babu,** II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfilment for the award of M.Sc. (Nursing) Degree.

Topic: "**A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem".**

Kindly permit to conduct a research project in your esteemed institution, from 11-7-11 to 7-8-11 with adherence to the hospital policies and regulations.

Thanking you,

Yours Obediently,

Place : Salem
Date :

(**M.Jawaharbabu)**

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550,2272240,2272250 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

LETTER REQUESTING PERMISSION TO CONDUCT A RESEARCH PROJECT

Date : .....

To

12.07.11

The General Manager,
SKS Hospital,
Salem.

Respected Sir/Madam,

Sub: Permission to conduct research project – reg.

This is to introduce **Mr. M. Jawahar Babu,** a final year M.Sc., (Nursing) student of Sri Gokulam College of Nursing. He is to conduct research project which is to be submitted to the Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirement for the award of M.Sc (Nursing) Degree.

Topic: "A Comparative Study To Evaluate the Effectiveness of Foleys Catheter Suctioning Versus Conventional Catheter Suctioning on Pain and Mucosal injury Among Patient with Tracheostomy at selected Hospitals, Salem".

I request you to kindly permit him to conduct a research project in your esteemed Hospital from 13-07-11 to 09-08-11. He will adhere to the Hospital policies and regulations.

Thanking you

Yours sincerely

(Dr.A.Jayasudha)
PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

S.K.S HOSPITAL INDIA (P) LTD. SALEM-4

ANNEXURE - C

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOL

From,

Mr.M.Jawahar Babu
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To,

(Through proper channel)

Respected Sir/ Madam,

Sub: Requesting opinion and suggestions of expert for establishing content validity of the tool.

I, **Mr.M.Jawahar Babu.,** II Year M.Sc. (Nursing) student of Sri Gokulam College of Nursing, Salem, have selected the below mentioned Statement of the Problem for the research study to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as partial fulfilment for the award of Master Of Science in Nursing.

Topic: "**A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem".**

I request you kindly validate the tool developed for the study and give your expert opinion and suggestion for necessary modifications.

Thanking you.

Place: Salem
Date:

Yours sincerely,

(M.Jawahar Babu)

Enclosed:

- Certificate of validation.
- Tool for collection of data.
- Criteria checklist for evaluation of tool.
- Content of reminiscence therapy.

ANNEXURE –D

TOOL

Section-A Background variables

Instruction to the participants:

Dear participant, this section requires some of the personal information and you are requested to answer each question correctly. The data given by you will be kept confidential.

Background variables **Sample No:** ☐

1. **Age in years**
   a) 21-30 ☐
   b) 31-40 ☐
   c) 41-50 ☐
   d) 51-60 ☐

2. **Sex**
   a) Male ☐
   b) Female ☐

3. **Frequency of suctioning**
   a) 1-5 ☐
   b) >5 ☐

4. **Type of tracheostomy tube**
   a) Plastic ☐
   b) Metal ☐

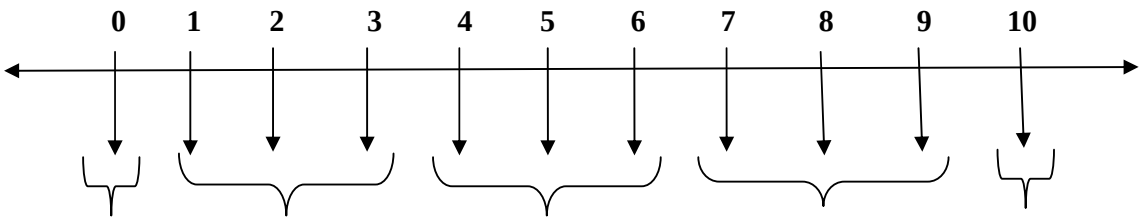
SECTION-B

Assessment of Mucosal injury and Level of pain using observational checklist and 0-10 Numerical Pain Intensity Scale

Table-1: Scoring procedure for assessing Mucosal injury

Bleeding	**Score**	
	Present	1
	Absent	0

Table-2: Scoring procedure for assessing Level of Pain using 0-10 Numerical Pain Intensity scale (Standardized)



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Level of pain	Score
No pain	0
Mild pain	1
Moderate pain	2
Severe pain	3
Worst pain	4

PROCEDURE FOR SUCTIONING

SUCTIONING

Suctioning is defined as force acting on a mucosal secretions caused by difference in pressure between two regions, tending to make the secretions flow from the region of higher pressure to the region of lower pressure.

Purpose

To assist in the removal of bronchial secretions that cannot be expectorated by the patient spontaneously**.**

Equipment

1. Mask
2. Suction Regulator/Equipment
3. 02 flow meter
4. Sterile suction catheter (Foleys catheter & Conventional suction catheter)
5. Sterile gloves
6. Stethoscope
7. Gloves

Preparation of the patients

1. Identify patient by verification of name
2. Identify yourself and your department
3. Inform the patient about the procedure and its purpose
4. Assemble Equipment
5. Examine and auscultate for secretions
6. Attach connective tubing to suction regulator/equipment and inlet of suction container. Connect suction machine to vacuum wall outlet. Turn vacuum on, and occlude tip of connective tubing.

Procedure

1. Wash hands and apply personal protective equipment as indicated (gloves and masks mandated).
2. Adjust vacuum between 80 to 120mmHg for adults
3. Position the patient by extending the neck slightly to facilitate entrance into the trachea Open suction catheter exposing only the connector, attach to connective tubing and maintain sterility of catheter.
4. Place sterile gloves on both hands.
5. Remove suction catheter from envelope maintaining sterile technique.
6. Insert the catheter through the tracheal tube to the point of restriction without applying suction.
7. After the restriction has been passed, slowly advance catheter. Ask patient to take deep breaths. Pass catheter into trachea. Once catheter has been placed in trachea, slowly withdraw while applying intermittent suction and rotating catheter. Remember: Suction should not be applied for more than 10-12 seconds.
8. Auscultate the patient's chest; if secretions can still be heard repeat the suctioning procedure
9. Followed by the procedure assess the suction catheter for bleeding to analyse the tracheal damage and 0-10 Numerical pain intensity scale for assessing the level of pain during suctioning.

ANNEXURE – E

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **MR. M.JAWAHAR BABU,** Final year M.Sc. Nursing student of Sri Gokulam College of Nursing, Salem (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem".**

Signature with Date

ANNEXURE - F

LIST OF EXPERTS

1. **Dr.S.SENTHILKUMARAN, M.D., A&E.,**
   Consultant and Incharge,
   Department of Emergency and Critical Care Medicine,
   Sri Gokulam Hospital,
   Salem.

2. **Dr. K. SELVAKUMARI, MD.,**
   Consultant Physician,
   Sri Gokulam Hospital,
   Salem.

3. **Mrs.PUSHPALATHA, Ph.D (N).,**
   HOD, Medical Surgical Department,
   Shanmuga College of Nursing,
   Salem.

4. **Ms.ABITHA, M.Sc(N).,**
   Associate Professor,
   Meenakshi College of Nursing,
   Chennai.

5. **Mrs. LAKSHMI PRABHA, M.Sc (N).,**
   Associate Professor,
   Vinayaga Mission College of Nursing,
   Salem.

6. **Mrs.GEETHA, M.Sc (N).,**
   Professor ,
   Vivegananda College Of Nursing
   Thiruchangodu.

7. **Mrs. SUMATHY, MSC (N).,**
   Associate Professor,
   Vinayaka Mission Annapoorna College of Nursing,
   Salem.

8. **Ms. SHEEJA, M.Sc(N).,**
   Associate Professor,
   Shanmuga College of Nursing,
   Salem.

ANNEXURE – G

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A Comparative Study To Assess The Effectiveness Of Foley's Catheter Suctioning Versus Conventional Catheter Suctioning On Mucosal Injury And Level Of Pain Among Patients With Tracheostomy In Selected Hospital, Salem"** by **Mr. M.JAWAHAR BABU,** It has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose

Signature with Date

S. MUTHUVAPPA
M.Com., M.Ed.,
HEADMASTER
MUNICIPAL PRIMARY SCHOOL
GRIBLESPET, ARAKKONAM

ANNEXURE – H

PHOTOS

FOLEY'S CATHETER SUCTIONING

PAIN ASSESSMENT USING NUMERICAL PAIN INTENSITY SCALE